Molecular cloning of two isoforms of a receptor for the human hematopoietic cytokine interleukin-11.

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Interleukin-11 (IL-11) is a stromal cell-derived cytokine with multiple biologic activities on lymphohematopoietic cells. It belongs to a family of pleiotropic and redundant cytokines that use the gp 130 transducing subunit in their high affinity receptors. By amplifying human cDNA libraries with oligonucleotide primers corresponding to the conserved WSXWS motif found in the hematopoietic cytokine receptor family, a novel cytokine receptor cDNA was identified that, based on high (82%) sequence homology with the recently cloned murine IL-11 receptor, appears to encode the human IL-11 receptor. This receptor is a 422-amino acid protein containing a signal peptide followed by extracellular, transmembrane, and cytoplasmic domains. The extracellular region has a two-domain structure homologous to those of the IL-6 and ciliary neurotrophic factor (CNTF) receptors: an immunoglobulin-like domain and a cytokine receptor-like domain. In addition, an isoform of the human IL-11 receptor that lacks the cytoplasmic domain was also identified. In agreement with the pleiotropic effects of IL-11 on different hematopoietic lineages and bone cells, IL-11 receptor transcripts were found to be expressed by the myelogenous leukemia cell line K562, the megakaryocytic leukemia cell line Mo7E, the erythroleukemia cell line TF1, and the osteosarcoma cell lines MG-63 and Saos-2.

PMID: 7670098, UI: 95399754